

REMARKS

Claims 77 to 109 and newly added claims 110 to 138 are pending in this application. Reconsideration and allowance are respectfully requested.

The claims have been rejected under 35 USC 112; the claims have been amended to overcome the Examiner's objections by the addition of clarifying language. No new matter has been added.

The claims have been rejected under varying paragraphs of 37 CFR 102/103 as being anticipated and unpatentable over several additional references uncovered during the Examiner's search, and including references previously cited. It is believed that the foregoing amendments and following remarks will place this application in condition for allowance.

Applicants have amended all claims to recite that the claimed invention is a method of polishing the noble metal feature, as opposed to the composition. Previously counsel had attempted to have the Examiner consider the substrate as part of the composition, but the Examiner maintained that an intended use does not have patentable weight. The Examiner is correct when he points out "language in a claim preamble ... acts as a claim limitation only when such language serves to 'give meaning to a claim and properly define the invention,' not when the preamble merely states a purpose or intended use of the invention." *Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 22 (Fed. Cir. 2000) (citations omitted). The CAFC has ruled that a claim preamble is not a limitation for purposes of determining claim scope and infringement in some instances where the preamble recites mere intentions for use and was not used during prosecution to distinguish the prior art. *Intirtool Ltd. v. Texar Corp.* 70 USPQ2d 1780 (2004). However, statements of intended use or asserted benefits in the preamble may, in rare instances, limit apparatus claims, but only if the applicant clearly and unmistakably relied upon those uses or benefits to distinguish prior art. *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002). Further, a claim preamble may be a limitation on claim scope and infringement when the main claim body acts on or refers to some feature found only in the preamble, and the preamble must be a claim limitation when the main body of the claim refers back to the preamble for a feature required by the main body of the claim. *Eaton Corp. v. Rockwell International Corp.*, 66 USPQ2d 1271 (2003) (emphasis added). Applicants felt that the phrase "in a combined amount sufficient to render the substrate surface substantially planar upon chemical-mechanical polishing thereof" in the main body of the claim referred

back to the preamble for a feature required by the main body of the claim (the words “substrate surface”). However, since prior counsel did not make this argument, the Examiner was within his discretion in continuing to reject the claims.

In an effort to promote the resolution of this case, Applicants have amended the claims to be method claims which affirmatively recite the substrate in the main body of the claim. In claim 77, Applicants also added the limitation that the polishing rate be between about 300 and about 2000 Angstroms per minute. Support for this can be found in the last line of paragraph 0005 of the filed specification.

Support for the suspension agents in claims 122 to 129 are: a material having a CAS number of CAS#1344-28-1 can be found in paragraph 0049 of the filed specification; the hydrous sodium lithium magnesium silicate can be found in paragraph 0055 of the filed specification; the ammonium polymethacrylate suspension agent can be found in paragraph 0058 of the filed specification; the colloidal silica suspension agent can be found in paragraph 0061 of the filed specification; the surfactant suspension agent can be found in paragraph 0058 of the filed specification, and for the organic acid, e.g., succinic acid, suspension agent can be found in paragraph 0066 of the filed specification.

Support for the substrate being gold or silver in claims 133 and 134 can be found in paragraph 0002 of the filed specification.

Support for the selectivity ratio added to claim 94 can be found in paragraph 0007 of the filed specification. Support for claim 138 can be found in paragraphs 0007 to 0008 of the filed specification.

Applicants submit that the claims as amended are patentable over the cited references.

The Examiner had previously rejected a number of the compositions over Fang (USP 6,461,227). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, as stated in column 2, lines 10-16), and does not mention noble metals as recited in all pending claims, much less specific noble metals such as iridium, iridium oxide (IrO₂), or platinum (Pt).

The Examiner had previously rejected a number of the compositions over Shemo 774 (USP 6,328,774). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, Ni-Fe, aluminum, boron carbide, and the like as stated in column 1, lines 10-16), and does not mention noble metals. Additionally, with respect to claims 84 and 112

to 138, having the phrase consisting essentially of, Shemo 774 requires a second oxide, a peroxydisulfate compound.

The Examiner had previously rejected a number of the compositions over Shemo 831 (USP 6,332,831). This patent describes compositions useful for polishing memory hard disks (e.g., nickel-phosphorous, Ni-Fe, aluminum, boron carbide, and the like as stated in column 1, lines 10-15), and does not mention noble metals as recited by all pending claims.

The Examiner had previously rejected a number of the compositions over Dirksen (published application 2002/0076932). This patent describes compositions useful for polishing substrates, and requires a metal oxide abrasive having a surface hydroxyl density of no greater than 3 hydroxyl groups per nm². This patent mentions the compositions described therein may be useful for noble metals in paragraph 8. However, with respect to claims 77 to 93, Dirksen does not teach polishing the noble metal at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Dirksen does not teach a composition having the required selectivity (nor do any of the Examples utilize alumina or periodic acid). With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Dirksen attains his hydroxyl group density by adding a reducing agent (e.g., organotitanium coupling agent, a silane coupling agent, an aluminum coupling agent...) as described in paragraph 13.

The Examiner had previously rejected a number of the compositions over Brusic (USP 6,527,622). This patent describes compositions useful for polishing noble metals, and requires any of: polishing additives selected from the group consisting of diketones, diketonates, heterocyclic nitrogen-containing compounds, heterocyclic oxygen-containing compounds, heterocyclic phosphorus-containing compounds, urea compounds, nitrogen-containing compounds that can be zwitterionic compounds, salts thereof, and combinations thereof; or a metal compound with two or more oxidation states used in conjunction with a peroxy-type oxidizer, or .alpha.-alumina and fumed alumina, wherein the weight ratio of .alpha.-alumina to fumed alumina is about 0.6:1 to about 9:1. However, with respect to claims 77 to 93, Brusic does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. In Example 1, even at a extremely high 500 RPM revolution rate, the platinum polishing rate varied between 1 and 60 angstroms per minute with a persulfate and between 5 and 377 angstroms per minute with hydrogen peroxide. No example or embodiment was described having periodic acid and attaining the

recited polishing rate. For ruthenium, none of the polishing compounds with persulfate reached a polishing rate of 300 angstroms per minute, though many did when ruthenium was polished with hydrogen peroxide. But none of the Examples utilize periodic acid. Brusic does not teach or suggest, furthermore, that equivalent results would, much less must, be achieved with a composition comprising periodic acid as would be achieved with certain combinations of hydrogen peroxide. With respect to claims 94 to 111, Dirksen does not teach a composition having the required selectivity. Not only do none of the Examples utilize periodic acid, but none report any polishing rates for a dielectric material. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Brusic requires any of a number of compounds which are not allowed for in the “consisting essentially of” claims.

The Examiner had previously rejected a number of the compositions over Moeggenborg (published application 2003/0060135). This application describes compositions useful for polishing noble metals, and requires a rare earth salt oxidizer used in conjunction with a peroxy-type oxidizer. However, with respect to claims 77 to 93, Moeggenborg does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. No example or embodiment was described having periodic acid and attaining the recited polishing rate. With respect to claims 94 to 111, Moeggenborg does not teach a composition having the required selectivity. Not only do none of the Examples utilize periodic acid, but none report any polishing rates for a dielectric material. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Brusic requires a rare earth salt oxidizer which not allowed for in the “consisting essentially of” claims.

The Examiner rejected a number of the compositions over Streinz (USP 5,993,686). This patent describes compositions useful for polishing tungsten and titanium nitride, and describe achieving excellent selectivity between the titanium nitride, tungsten, and a dielectric material – but not with respect to any noble metals. Additionally, with respect to claims 77 to 93, Streinz does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Streinz does not teach a composition having the required selectivity between a noble metal and the dielectric. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Streinz requires a fluoride-containing additive which not allowed for in the “consisting essentially of” claims.

The Examiner rejected a number of the compositions over Kaufman (USP 6,063,306). This patent describes compositions useful for polishing copper and tantalum nitride, but not with any noble metals. Additionally, with respect to claims 77 to 93, Kaufman does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Kaufman does not teach a composition having the required selectivity between a noble metal and the dielectric. With respect to claims 84 and 112 to 138, having the phrase consisting essentially of, Kaufman (at column 3, lines 42-45) requires both a complexing agent and an organic amino compound. While the complexing agent might be an organic acid such as described in certain embodiments of the suspension agent, the organic amino compound is not allowed for in the "consisting essentially of" claims.

The Examiner rejected a number of the compositions over Tredinnick (published application 2002/0125460). This application describes compositions useful for polishing tungsten and titanium nitride, but not with any noble metals. Additionally, with respect to claims 77 to 93, Tredinnick does not teach polishing the noble metal with a composition comprising periodic acid at a rate between about 300 and about 2000 angstroms per minute. With respect to claims 94 to 111, Tredinnick does not teach a composition having the required selectivity between a noble metal and the dielectric.

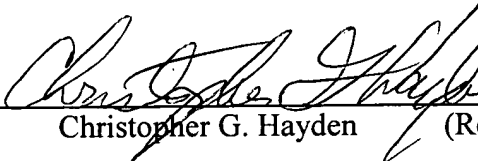
In conclusion, none of these references, alone or together, teach the limitations of the claims as amended. Applicants therefore respectfully request reconsideration and allowance of all claims.

The Examiner is requested to note that a different firm has submitted this amendment than the previous submissions. The Examiner is respectfully asked to address his response to the undersigned, and, should there be any matters which the Examiner believes can be handled by either a telephonic or by an in-person interview, the Examiner is requested to call the undersigned at 202 739-5557.

A fee for a three (3) month extension is believed necessary relating to this response, and it is submitted with a fee authorization sheet separately. No additional fees are believed due – however, if any additional fees are deemed necessary for any reason, the Office is authorized to charge them to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310.

Respectfully submitted,

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